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November the second, 1971, A proud day for Canada

On that day the Swedish Royal Academy of Sciences in Stockholm announced that Dr. Gerhard Herzberg of the National Research Council of Canada had been awarded the 1971 Nobel Prize for Chemistry. He thus became Canada's first Nobel Prize winner in the natural sciences.

The Nobel Prize was awarded to Dr. Herzberg for his contributions to the knowledge of electronic structure and geometry of molecules, particularly free radicals.

In making the announcement the Swedish Royal Academy said Dr. Herzberg's ideas and discoveries had stimulated the whole development of chemistry from chemical kinetics to cosmochemistry. More specifically, his successes in identifying some simple organic chemical radicals, such as methyl, by their spectrographic emission characteristics subsequently allowed astronomers to identify many of these chemicals in interstellar space.

The Academy said that "under Dr. Herzberg's dynamic leadership his laboratory (at the National Research Council of Canada in Ottawa) has attained a unique position as the foremost center for molecular spectroscopy in the world. His investigations provide extremely precise information on molecular energies, rotations, vibrations and electronic structures which, in turn, yield data on molecular geometries, that is the distance between the atoms in a molecule. From such investigations many results of fundamental importance for chemical physics and quantum theory were obtained. The work on the hydrogen molecule is especially outstanding."

Dr. Herzberg, former Director of NRC's Division of Physics and now a



Distinguished Research Scientist at NRC, is the fourth Canadian to be awarded a Nobel Prize. Previous prizes were awarded to former Canadian Prime Minister Lester B. Pearson in 1957 for his effort to bring peace to the Middle East and to Dr. Frederick Banting and Dr. John Macleod for their role in the development of insulin in 1923.

The 66-year-old NRC physicist was on a lecture tour in Russia when the announcement of the award was made in Stockholm. The Academy also announced that the 1971 Nobel Prize for Physics had been awarded to Dr. Dennis Gabor, Professor Emeritus at the Imperial College of Science and Technology, London, England.

Dr. Herzberg first learned that he had been awarded the Nobel Prize in Chemistry after he had boarded a train in Leningrad for a trip to Moscow. He was informed by the Foreign Secretary of the Soviet Academy of Sciences.

Following the announcement, Dr. W. G. Schneider, President of NRC, said "this is indeed a proud moment

for Canadian science and the entire staff of the National Research Council of Canada. It is international recognition of a Canadian research effort spread over many years — a research effort which is being continued by Dr. Herzberg. I feel that this recognition of Dr. Herzberg is well merited."

Dr. Gerhard Herzberg was born in Hamburg, Germany, on Christmas Day in 1904. He received his early training in Hamburg and subsequently studied physics at the Darmstadt Institute of Technology where he obtained his Dr. Ing. degree in 1928. From 1928 to 1930 he was engaged in post-doctorate work at the Universities of Gottingen and Bristol. In 1930 he was appointed Lecturer and Senior Assistant in the Physics Department of the Darmstadt Institute.

After Hitler came to power in Germany, Dr. Herzberg went to the University of Saskatchewan on a Carnegie guest professorship in 1935. He later was appointed a Research Professor of Physics, a position he held until 1945. From 1945 to 1948, Dr. Herzberg was Professor of Spectroscopy at the Yerkes Observatory of the University of Chicago.

In 1948, Dr. Herzberg joined NRC's Division of Physics. He was appointed Director of the Division in 1949, a position he held until his retirement in 1969. On his retirement he was appointed a Distinguished Research Scientist to permit him to continue his work at NRC.

Dr. Herzberg is the author of more than 200 papers and five books. His three-volume series entitled "Molecular Spectra and Molecular Structures" is considered as the basic reference text in molecular spectroscopy.

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Cover: Photograph of a light bulb shattered by a pellet from an air gun with action stopped at one millionth of a second. Unlike many high-speed photographs, which are single frames from cine film, this one was taken with a still camera using a light source as the shutter. The light bulb and camera with flash attachment and its shutter open were placed in a darkened room. After the pellet had shattered the bulb, it almost instantaneously broke an electrical circuit actuating the camera's electronic flash. Photograph by Bruce Kane of NRC, using facilities of the Council's Division of Mechanical Engineering.

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